

ABSTRACT

A hydraulic raising apparatus with automatic regulated speeds can automatically adapt its raising speeds for various load conditions. It mainly comprises additional hydraulic circuits, check valves and adjustable relief valves arranged between the piston rod side chamber and the rodless side chamber of hydraulic cylinders and pumps. The arrangement enables hydraulic cylinders and pumps to change their working modes in a hydraulic circuit, depending on loaded conditions, from a piston type to a spool type and vice versa. Hence the hydraulic apparatus can adjust its raising speeds in agreement with loads. When the apparatus bears a light load, it will quickly carry the load to position. On the other hand, when the load is heavy the apparatus will move it at a slower speed and thus need just reduced input energy. Therefore, the apparatus according to the invention can enhance efficiency to the greatest extent.